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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------|-------------|----------------------|---------------------|------------------|
| 09/885,784 | 06/20/2001 | Mong-Song Liang | 67,200-327 | 3661 |

7590 03/18/2002

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EXAMINER

MALDONADO, JULIO J

ART UNIT PAPER NUMBER

2823

DATE MAILED: 03/18/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

2

| | | | | |
|------------------------------|------------------------|--|---------------------|--|
| Office Action Summary | Application No. | | Applicant(s) | |
| | 09/885,784 | | LIANG ET AL. | |
| | Examiner | | Art Unit | |
| | Julio J. Maldonado | | 2823 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 20 June 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-13 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-13 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) <u>2</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

2. Claims 1, 5-6, 8-9, 12 and 13 are rejected under 35 U.S.C. 102(e) as being anticipated by Kelly et al. (U.S. 6,143,117).

In reference to claim 1 Kelly et al. (Fig. 1-8) teaches a related method to transfer thin film structures including the steps of providing a first semiconductor substrate (40); forming over the first semiconductor substrate (40) at least one microelectronic device (44) to form from the first semiconductor substrate (40) a partially fabricated semiconductor integrated circuit microelectronic fabrication (44, 46); providing a second substrate (10); forming over the second substrate (10), in inverted order, a dielectric isolated metallization pattern (20, 26, 32, 34, 36, 38) intended to mate with the partially fabricated semiconductor integrated circuit microelectronic fabrication (44, 46); and laminating the partially fabricated semiconductor integrated circuit microelectronic fabrication (44, 46) with the second substrate (10) to mate the partially fabricated semiconductor integrated circuit microelectronic fabrication (44, 46) with the dielectric isolated metallization pattern (20, 26, 32, 34, 36, 38) to thus form a laminated

completely fabricated semiconductor integrated circuit microelectronic fabrication (44, 46, 20, 26, 32, 34, 36, 38) (column 4, line 55 – column 9, line 43).

In reference to claims 3-6, 8-10 and 12-13 Kelly et al. shows that that the second substrate is selected from the group consisting of conductor substrates, semiconductor substrates and aggregates thereof; that the second substrate is a second semiconductor substrate; that the first semiconductor substrate is thicker than the second substrate; that the dielectric isolated metallization pattern comprises a plurality of laminated patterned conductor layers; that the mating of the partially fabricated semiconductor integrated circuit microelectronic fabrication with the dielectric isolated metallization pattern formed over the second substrate is undertaken while employing a laminating method consisting of thermally assisted laminating; removing from the laminated completely fabricated semiconductor integrated circuit microelectronic fabrication the second substrate; that the semiconductor substrate is not thinned after forming thereover the minimum of one microelectronic device; that the second substrate is not removed from the dielectric isolated metallization pattern prior to mating the partially fabricated semiconductor integrated circuit microelectronic fabrication with the dielectric isolated metallization pattern; and that the second substrate is removed from the laminated completely fabricated semiconductor integrated circuit microelectronic fabrication from the group consisting of etch methods, milling methods and polish methods (column 4, line 55 – column 9, line 43).

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kelly et al. ('117).

In reference to claim 7 Kelly et al. shows all aspects of the invention but fails to teach that each laminated patterned conductor layer within the plurality of laminated patterned conductor layers is formed to a thickness of from about 3,000 to about 6,000 Å. This claim is prima facie obvious without showing that the claimed ranges achieve unexpected results relative to the prior art range. In re Woodruff, 16 USPQ2d 1935, 1937 (Fed. Cir. 1990). See also In re Huang, 40 USPQ2d 1685, 1688 (Fed. Cir. 1996) (claimed ranges of a result effective variable, which do not overlap the prior art ranges, are unpatentable unless they produce a new and unexpected result which is different in kind and not merely in degree from the results of the prior art). See also In re Boesch, 205 USPQ 215 (CCPA) (discovery of optimum value of result effective variable in known process is ordinarily within skill of art) and In re Aller, 105 USPQ 233 (CCPA 1955) (selection of optimum ranges within prior art general conditions is obvious).

5. Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kelly et al. ('117) in view of Davidson (U.S. 5,880,010).

In reference to claim 2 Kelly et al. teaches all aspects of the invention but fails to teach that the microelectronic device is selected from the group consisting of resistors, transistors, diodes and capacitors. Nevertheless, Davidson shows that the microelectronic device is selected from the group consisting of resistors, transistors, diodes and capacitors (column 3, lines 58-67).

Therefore, it would have been obvious to skilled in the art to include the teachings of Davidson in those of Kelly et al. for an expectation of success. The motivation/suggestion would have been that the formation of active devices and coupling them by interconnects reduces the space of an integrated circuit to less than 1% of its conventional size (column 1, lines 35-39).

6. Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kelly et al. ('117) in view of Sato et al. (U.S. 6,309,945).

In reference to claim 11 Kelly et al. in combination teaches all aspects of the invention but fails to show that the second substrate is removed by a CMP method. Nevertheless Sato et al. (Fig.4A-4E) teaches a related method to prepare substrates including the steps of removing the second substrate (14) is removed by a CMP process (column 7, lines 56-65).

Therefore, it would have been obvious to one skilled in the art to include the teachings of Sato et al. with those of Kelly et al. to arrive the claimed invention. The motivation/suggestion would have been that this technique allows the ease of dielectric separation, high integration and high speed operation (column 1, lines 1-33)

Conclusion

7. Papers related to this application may be submitted directly to Art Unit 2823 by facsimile transmission. Papers should be faxed to Art Unit 2823 via the Art Unit 2823 Fax Center located in Crystal Plaza 4, room 3C23. The faxing of such papers must conform to the notice published in the Official Gazette, 1096 OG 30 (15 November 1989). The Art Unit 2823 Fax Center number is **(703) 305-3432**. The Art Unit 2823 Fax Center is to be used only for papers related to Art Unit 2823 applications.
8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to **Julio J. Maldonado** at **(703) 306-0098** and between the hours of 8:00 AM to 4:00 PM (Eastern Standard Time) Monday through Friday or by e-mail via julio.maldonado@uspto.gov. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wael Fahmy, can be reached on (703) 308-4918.
9. Any inquiry of a general nature or relating to the status of this application should be directed to the **Group 2800 Receptionist** at **(703) 308-0956**.
10. The following list is the Examiner's field of search for the present Office Action:

| Field of Search | Date |
|--|------------|
| U.S. Class / Subclass(es): 156/233, 438/409, 438/455 | 03/08/2002 |
| Other Documentation: | |
| Electronic Database(s): EAST (USPAT) | 03/08/2002 |

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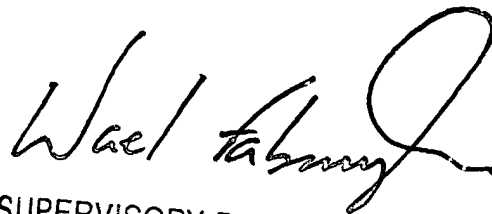
Julio J. Maldonado

Patent Examiner

Art Unit 2823

703-306-0098

julio.maldonado@uspto.gov

A handwritten signature in black ink, appearing to read "Wael Tahany". The signature is fluid and cursive, with a large loop at the end.

SUPERVISORY PRIMARY EXAMINER
TECHNOLOGY CENTER 2800